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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,135	04/08/2004	David C. Collins	200400517-1	8954

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HEWLETT PACKARD COMPANY  
P O BOX 272400, 3404 E. HARMONY ROAD  
INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER
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SITTA, GRANT

ART UNIT	PAPER NUMBER
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2629

MAIL DATE	DELIVERY MODE
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07/16/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/821,135	<b>Applicant(s)</b> COLLINS ET AL.	
	<b>Examiner</b> Grant D. Sitta	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 25 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-15 and 20-33 is/are rejected.
- 7) ☐ Claim(s) 16-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/08/2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u>                                    | 6) <input type="checkbox"/> Other: _____                          |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date  
:12/01/2005,07/29/2005,12/27/2004,4/8/2004.

## **DETAILED ACTION**

### ***Double Patenting***

1. Claim 1 is rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 7,109,981 (Damera-Venkata) in view of U.S. Pub. 2003/0020809 (Gibbon). Damera-Venkata teaches every limitation of claim one except "wherein each of the second set of pixels is centered relative to one of the first set of pixels." However, Gibbon teaches "the two resulting sub-images are offset by one half of a pixel in both horizontal and vertical directions" ([0012]).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Damera-Venkata to include the use of a second set of pixels that are centered relative to one of the first set of pixels as taught by Gibbon in order to allow "the two sub-images to combine to produce a final image having a greater resolution than that provided by the actual pixels" as stated in ([0012], of Gibbon).

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "each of the first, second, third, and fourth sub-frames comprising a plurality of sub-frames pixel values that correspond to a plurality of sub-frames pixels that are centered with respect to a

plurality of pixels of the image data;" (claim 20) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. Claim 20 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one

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skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. "means for generating the first, the second, the third, and the fourth sub-frames using the image data, each of the first, second, third, and fourth sub-frames comprising a plurality of sub-frame pixel values that correspond to a plurality of sub-frame pixels that are centered with respect to a plurality of pixels of the image data; a means for calculating a plurality of simulated image pixel values for a simulated image by convolving each of the sub-frame pixel values with at least four other sub-frame pixel values; and means for updating the first, the second, the second, the third, and the fourth sub-frames in accordance with a difference between the simulated image and the image data." (claim 20)

### Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.

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3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gibbon, in view of Groenenboom et. al (US PUB 6,304,245) hereinafter, Groenenboom.

In regards to claim 14, Gibbon discloses the limitations of claim 13

Gibbon differs from the claimed invention in that Gibbon does not disclose wherein the first set of pixels comprises a plurality of pixels at a first resolution, and wherein the second set of pixels comprises a plurality of pixels at a second resolution less than the first resolution.

However, Groenenboom teaches a system and method for "wherein the first set of pixels (foreground) comprises a plurality of pixels at a first resolution ("having different resolution"), and wherein the second set of pixels comprises a plurality of pixels (background) at a second resolution less than the first resolution " (abstract, fig. 5 col. 3-4, lines 6-25 of Groenenboom).

It would have been obvious to one of ordinary skill in the art, at the time of the invention, to modify Gibbon to include the use of mixing a foreground picture and a background picture as taught by Groenenboom in order to mix differing resolutions as stated in (col. 1, lines 5-15 of Groenenboom).

***Response to Arguments***

7. Applicant's arguments, see claim 14 pg 17-18, filed 4/25/2007, with respect to the rejection(s) of claim(s) 14 under Gibbon have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Gibbon in view of Groenenboom et al (US PUB 6,304,245).

8. In regards to claims 1 and 2, applicant argues Gibbon fails to teach "wherein each of the second set of pixels is centered relative to one of the first set of pixels." However, Examiner notes Gibbon teaches receiving image data for the image (fig. 1 "video signal"), the image data comprising a first set of pixels (fig. 6 (41)); generating first and second sub-frames (figs 13 and 14 [0047]), wherein the first (fig. 13 (R)) and the second sub-frames (fig. 13 (L)) comprise a second set of pixels (fig 6 ((51)), wherein each of the second set of pixels (fig. 6 (51)) is centered (fig. 6 (41) and (51) [0012] "two resulting sub-images are offset by one half of a pixel in both horizontal and vertical directions") relative to one of the first set of pixels (fig. 6 (41)) [0035]; and alternating (abstract "alternately projects") between displaying the first sub-frame (abstract "alternately projects off-set image sub-fields") in a first position (fig. 6 and fig. 13 (R)) and displaying the second sub-frame (fig. 6 and fig. 13 (L)) in a second position spatially offset from the first position (fig. 6 and fig. 13 [0046-0048]). Accordingly,



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Gibbons does show how the sub-frames relate to the image data from which the sub-frames were created.

9. In regards to claim 13, applicant argues all the teaches or suggestions of claim 13 have not been identified. However, Gibbon teaches a buffer (inherent with DMD) adapted to receive image data (fig. 1 "video signal") for the image, the image data comprising a first set of pixels (fig. 6 (41));

an image processing unit (fig. 7 [0036-0038]) configured to define first (fig. 15 (R), second (L), third (R), and fourth (L) sub-frames comprising a second set of pixels (fig. 6 (51)), wherein each of the second set of pixels (fig. 6 (51)) is centered (fig. 6 (41) and (51) [0012] "two resulting sub-images are offset by one half of a pixel in both horizontal and vertical directions") on one of the first set of pixels (fig. 6 (41)); and

a display device (fig. 1) adapted to alternately display (abstract "alternately projects") the first sub-frame in a first position (fig. 15 (R)), the second sub-frame (fig. 15, (L)) in a second position spatially offset from the first position (fig. 15 (R)), the third sub-frame in a third position spatially offset from the first position and the second position, and the fourth sub-frame (fig. 15 (L)) in a fourth position spatially offset from the first position, the second position, and the third position (fig. 13, 14 and 15 [0046-0048]) Examiner notes that in fig 15 the four respective sub-frames (R, L, R, L) are spatially offset according to fig. 6.

10. In regards to claim 20, applicant argues limitations of claim 20 have not been meet for the reasons of claim 1. However, Gibbon teaches a means for generating (fig. 15) the first (R), the second (L), the third (R), and the fourth (L) sub-frames using the image data[0046-0050], each of the first (R), second(L), third(R), and fourth (L) comprising a plurality (fig. 6) of sub-frames pixel values [0047-0050] that correspond to a plurality of sub-frames pixels [0047-0050] that are centered (fig. 6 (41) and (51) [0012] "two resulting sub-images are offset by one half of a pixel in both horizontal and vertical directions") with respect to a plurality of pixels(fig. 6 (41) and (51) of the image data (fig. 6 and 15..."

11. In regards to claim 26,applicant argues that the limiations of claim 26 have not been meet for the reasons of claim 1. However, Gibbon teaches generating (fig. 15) first (R), second(L), third(R), and fourth(L) sub-frames based on the first image(fig. 15 prisms 102 is one image) such that each pixel [0035] in each of the (fig. 15) first (R), the second (L), the third (R), and the fourth (L) sub-frames is centered (fig. 6 (41) and (51) [0012] "two resulting sub-images are offset by one half of a pixel in both horizontal and vertical directions") with respect to a corresponding pixel [0035] in the first image (fig. 6 and fig. 15 102 and 104..."

12. In regards to claims 4-6, 10 and 11 it would have been an obvious matter of design choice to make the interpolating filter (fig. 1 (120, 140 and 160) Carlson) and filter coefficients (fig. 1 (120, 140 and 160) Carlson) fixed values, since such a

modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. In re Rose, 105 USPQ 237 (CCPA 1955).

### **Inquiry**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Grant D. Sitta whose telephone number is 571-270-1542. The examiner can normally be reached on M-F 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on 571-270-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Grant D. Sitta  
July 6, 2007

  
AMARE MENGISTU  
SUPERVISORY PATENT EXAMINER